

Operating Instructions

Membrane Metering Pumps

Ritmo 031-XX

FINK Chem + Tec OHG
Hofstraße 9
78073 Bad Dürrheim
Tel. 07726-929655
Fax 07726-929656
Dieter.Fink@finkct.de
www.finkct.de

Contents

Index of contents

1. Safety instructions	4
1.1 Identification of safety instructions in these instructions	4
1.2 Qualification and training of personnel	4
1.3 Safety instructions for the operator/ user	4
1.4 Safety of the system in the event of a failure in the dosing pump	5
1.5 Dosing chemicals	5
1.6 Safety instructions for service, inspection and mounting	5
2. General	6
2.1 Warranty	6
2.2 Applications	6
2.3 Improper operating methods	6
2.4 Nameplate	7
2.5 Type key	8
2.6 Device overview	9
3. Technical data / dimensions	9
3.1 Technical data	9,10
3.2 Dimensions	11
4. Assembly and installation	12
4.1 Pump assembly	12
4.1.1 Requirements	12
4.1.2 Align and install mounting plate	12
4.1.3 Engage pump in mounting plate	12
4.2 Hydraulic connection	13
4.3 Electrical connection	14
5. Commissioning	15
5.1 General notes	15
5.2 Check before commissioning	16
5.3 Start and dearate the pump	16
6. Operation	16
6.1 Operating elements	16
6.2 Operation modes	17
6.2.1 Manual	17
6.2.2 Pulse	17
6.2.3 Change operation modes	18
6.3 Inputs	18
6.3.1 External stop	18
6.3.2 Empty signal	18
6.3.3 Change contact type	18
7. Service	18
7.1 Service intervals	19
7.2 Perform service	19
7.2.1 Dosing head overview	19
7.2.2 Dismantling the diaphragm and valves	19
7.2.3 Reassembling the diaphragm and valves	20
7.3 Repairs	20
8. Faults	20
8.1 Indication of faults	20
8.1 List of faults	21

9.	Disposal	21
10.	Safety declaration	22
11.	EG- Declaration of Conformity	23

1. Safety instructions

These installation and operating instructions contain general instructions that must be observed during installation, operation and maintenance of the pump.

It must therefore be read by the installation engineer and the relevant qualified operator prior to installation and start-up, and must be available at the installation location at all times.

Apart from these general safety instructions there are further special instructions in other sections to which attention must be given.

The instructions mounted directly on the metering pump must be heeded and always kept in a visible condition.

Besides the general safety instructions the operator must consider the existing national regulations for accident prevention as well as the internal working, company, and safety regulations.

1.1. Identification of safety instructions in these instructions

The safety instructions are identified by the following symbols:



Warning

If these safety instructions are not observed, it may result in personal injury!



If these safety instructions are not observed, it may result in malfunction or damage to the equipment!



Notes or instructions that make the job easier and ensure safe operation.

1.2 Qualification and training of personnel

The personnel responsible for the installation, operation and service must be appropriately qualified for these tasks. Areas of responsibility, levels of authority and the supervision of the personnel must be precisely defined by the operator. If necessary, the personnel must be trained appropriately.

Risks of not observing the safety instructions

Non-observance of the safety instructions may have dangerous consequences for the personnel, the environment and the pump and may result in the loss of any claims for damages.

It may lead to the following hazards:

- Personal injury from exposure to electrical, mechanical and chemical influences.
- Damage to the environment and personal injury from leakage of harmful substances.

1.3 Safety instructions for the operator/ user

The safety instructions described in these instructions, existing national regulations on health protection, environmental protection and for accident prevention and any internal working, operating and safety regulations of the operator must be observed.

Information attached to the pump must be observed.

Leakages of dangerous substances must be disposed of in a way that is not harmful to the personnel or the environment.

Damage caused by electrical energy must be prevented, see the regulations of the local electricity supply company and the regulations VDE.



Before starting work on the pump, the pump must be disconnected from the mains. The system must be pressureless!

Only original accessories and original spare parts should be used. Using other parts can result in exemption from liability for any resulting consequences.

An existing guards for moving parts must not be removed while the system is in operation.

1.4 Safety of the system in the event of a failure in the dosing pump

The dosing pump was designed according to the latest technologies and is carefully manufactured and tested.

If it fails regardless of this, the safety of the overall system must be ensured. Use the relevant monitoring and control functions for this.

Caution

**Make sure that any chemicals that are released from the pump or any damaged lines do not cause damage to system parts and buildings.
The installation of leak monitoring solutions and drip trays is recommended.**

1.5 Dosing chemicals



Warning

Before switching the supply voltage back on, the dosing lines must be connected in such a way that any chemicals in the dosing head cannot spray about and put people at risk.

The dosing medium is pressurized and can be harmful to health and the environment.



Warning

When working with chemicals, the accident prevention regulations applicable at the installation site should be applied (e.g. wearing protective clothing).

Observe the chemical manufacturer's safety data sheets and safety instructions when handling chemicals!



Warning

If the diaphragm leaks or is broken, dosing liquid will escape from the discharge opening on the dosing head (see fig. 2).

Take suitable precautions to prevent harm to health and damage to property from escaping dosing liquid!

**Check daily whether liquid is escaping from the discharge opening!
Changing the diaphragm, see section 7. Service.**

Caution

A deaeration hose, which is routed into a container, e.g. a drip tray, must be connected to the deaeration valve.

Caution

The dosing medium must be in liquid aggregate state!

Observe the freezing and boiling points of the dosing medium!

Caution

The resistance of the parts that come into contact with the dosing medium, such as the dosing head, valve ball, gaskets and lines, depends on the medium, media temperature and operating pressure.

Ensure that parts in contact with the dosing medium are resistant to the dosing medium under operation conditions.

Should you have any questions regarding the material resistance and suitability of the pump for specific dosing media, please contact with Fink Chem + Tec OHG

1.6 Safety instructions for service, inspection and mounting

The organization is responsible for execution of all service, inspection and mounting work is only done through authorized qualified persons who are instructed with an adequate study of the mounting and operating instructions.

Fundamentally, all work on the metering pump is executed only when the pump is not running. The stopping procedure of the pump must be executed as described in the operating instructions.

Directly after termination of a process all safety and protection fittings must be placed back into place i.e. set in to function.

Before renewed operation all instructions in the section 'Putting into operation' must be executed.

2. General

The dosing pump R031 is a self-priming diaphragm pump. It consists of a housing with stepper motor and electronics and a dosing head with diaphragm and valves.

Excellent dosing features of the pump:

- Optimal intake even with degassing media, as the pump always works at full suction stroke volume.
- Continuous dosing, as the medium is sucked up with a short suction stroke, regardless of the current dosing flow, and dosed with the longest possible dosing stroke.

2.1 Warranty

A guarantee claim in accordance with our general terms of sale and delivery is only valid if the following requirements are fulfilled:

- The pump is used in accordance with the information within this manual.
- The pump is not dismantled or incorrectly handled.
- The maintenance is carried out by authorised and qualified personnel.
- Original spare parts are used for repairs during maintenance.

2.2 Applications

The pump is suitable for liquid, non-abrasive, non-flammable and non-combustible media strictly in accordance with the instructions in these installation and operating instructions. The stated limiting values as shown in the technical data must not be exceeded in any case.

Areas of Application

- Drinking water treatment
- Wastewater treatment
- Swimming pool water treatment
- Boiler water treatment
- CIP (Clean-In-Place)
- Cooling water treatment
- Process water treatment
- Wash plants
- Chemical industry
- Ultrafiltration processes and reverse osmosis
- Irrigation
- Paper and pulp industry
- Food and beverage industries

2.3 Improper operating methods

The operational safety of the pump is only guaranteed if it is used in accordance with section 2.2 Applications.

Caution

Frequent disengagement from the mains voltage, e.g. via a relay, can result in damage to the pump electronics and to the breakdown of the pump. The dosing accuracy is also reduced as a result of internal start procedures.

Do not control the pump via the mains voltage for dosing purposes!
Only use the 'External stop' function to start and stop the pump!



Warning

Other applications or the operation of pumps in ambient and operation conditions, which are not approved, are considered improper and are not permitted. The Fink Chem + Tec OHG cannot be held liable for any damage resulting from incorrect use.



Warning

The pump is NOT approved for operation in potentially explosive areas!



Warning

A sunscreen is required for outdoor installation!

2.4 Nameplate

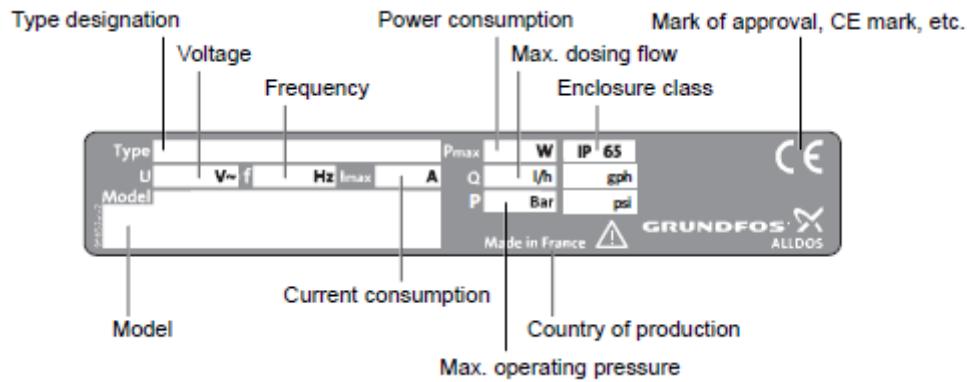


Fig. 1 Nameplate

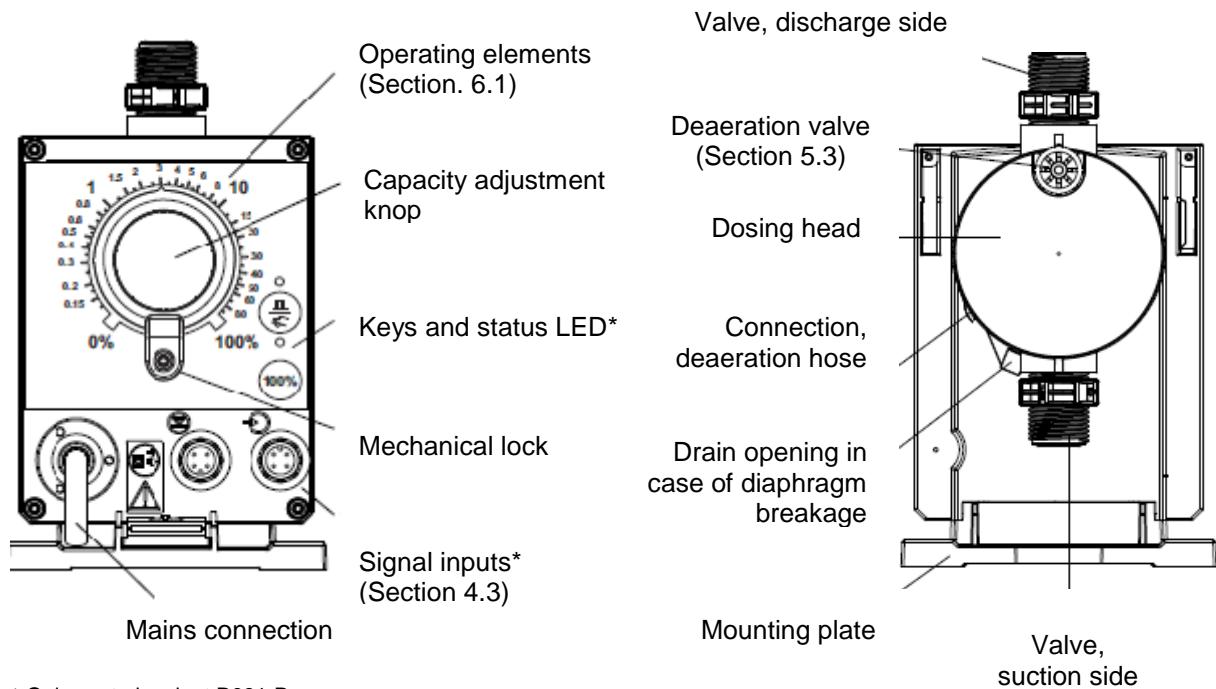
2.5 Type key

The type key is used to identify the precise pump and is not used for configuration purposes.

Code	Example	R031	6-	10	P-	PP/	V/	C-	X-	3	1	U2U2	F	G
	Pump type													
	Max. flow [l/h]													
	Max. pressure [bar]													
	Control variant													
B	Basic													
P	B with pulse mode													
PP	Dosing head material													
PP	Polypropylene													
PVC	PVC (polyvinyl chloride) (PVC dosing heads only up to 10 bar)													
PV	PVDF (polyvinylidene fluoride)													
SS	Stainless steel DIN 1.4401													
PVC-P3	PVC with Plus ³													
E	Gasket material													
E	EPDM													
V	FKM													
T	PTFE													
C	Valve ball material													
C	Ceramic													
SS	Stainless steel DIN 1.4401													
X	Control cube position													
X	No control cube													
3	Voltage													
3	1 x 100-240 V, 50/60 Hz													
1	Valve type													
1	Standard													
2	Spring-loaded (HV version)													
U2U2	Suction/discharge side connection													
U2U2	Hose, 4/6 mm, 6/9 mm, 8/12 mm, 9/12 mm													
U7U7	Hose 1/8" x 1/4"; 0.17" x 1/4"; 1/4" x 3/8"; 3/8" x 1/2"													
AA	Threaded Rp 1/4", female (stainless steel)													
VV	Threaded 1/4" NPT, female (stainless steel)													
XX	No connection													
I001	Installation set*													
I001	Hose, 4/6 mm (up to 7.5 l/h, 16 bar)													
I002	Hose, 9/12 mm (up to 60 l/h, 13 bar)													
I003	Hose 0.17" x 1/4" (up to 7.5 l/h, 16 bar)													
I004	Hose, 3/8" x 1/2" (up to 60 l/h, 10 bar)													
F	Power plug													
F	EU (Schuko)													
B	USA, Canada													
G	UK													
I	Australia, New Zealand, Taiwan													
E	Switzerland													
J	Japan													
L	Argentina													
G	Design													
G	Grundfos													

* including: 2 pump connections, foot valve, injection unit, 6 m PE discharge hose, 2 m PVC suction hose, 2 m PVC deaeration hose (4/6 mm).

2.6 Device overview



* Only control variant R031-P

Fig. 2 Overview

3. Technical data / dimensions

3.1 Technical data

Data		Pump type R031-	
		6-10	15-4
Mechanical data	Turndown ration (setting range)	[1:X]	1000 1000
	Max. dosing flow	[l/h]	6,0 15,0
		[gph]	1,5 4,0
	Min. Dosing flow	[l/h]	0,006 0,015
		[gph]	0,0015 0,0040
	Max. operating pressure	[bar]	10 4
		[psi]	150 60
	Max. stroke frequency ¹⁾	[strokes/min]	140 180
	Stroke volume	[ml]	0,81 1,58
	Accuracy of repeatability	[%]	+/- 5
	Max. suction lift during operation ²⁾	[ml]	6
	Max. suction lift when priming with wet valves ²⁾	[m]	2 3
	Min. pressure difference between suction and discharge side	[bar]	1
	Max. pressure, suction side	[bar]	2
	Max. viscosity with spring-loaded valves ³⁾	[mPas](=cP)	600 500
	Max. viscosity without spring-loaded valves ³⁾	[mPas](=cP)	50
	Min. diameter of hose/pipe on suction/discharge side ²⁾⁴⁾	[mm]	4 6
	Min. diameter of hose/pipe on suction side for highly viscous media (HV) ⁴⁾	[mm]	9
	Min. diameter of hose/pipe on discharge side for highly viscous media (HV) ⁴⁾	[mm]	9
	Max. media temperature	[°C]	45
	Min. media temperature	[°C]	-10

Data			6-10	15-4
Mechanical data	Max. ambient temperature	[°C]	45	
	Min. ambient temperature	[°C]	0	
	Max. storage temperature	[°C]	70	
	Min. storage temperature	[°C]	-20	
Electrical data	Voltage	[V]	100-240 V, 50-60 Hz	
	Length of mains cable	[m]	1,5	
	Max. current consumption (100 V)	[A]	0,12	
	Max. current consumption (230 V)	[A]	0,05	
	Max. power consumption P ₁	[W]	12	
	Enclosure class		IP 65, Nema 4X	
Signal input ¹⁾	Electrical safety class		II	
	Max. load for level input		12 V, 5 mA	
	Max. load for pulse input		12 V, 5 mA	
	Max. load for external stop		12 V, 5 mA	
	Min. pulse length	[ms]	5	
	Max. pulse frequency	[Hz]	100	
	Max. resistance in level circuit	[Ω]	1000	
Weight /size	Max. resistance in pulse circuit	[Ω]	1000	
	Weight (PVC, PP, PVDF)	[kg]	2,4	
	Weight (stainless steel)	[kg]	3,2	
Sound pressure level	Diaphragm diameter	[mm]	44	50
	Max. sound pressure level	[dB(A)]		60
Approvals	CE, CSA-US, NSF61, GHOST, C-Tick			

1) Applies to R031-P control variant

2) Data is based on measurements with water

3) Maximum suction lift: 1 m, dosing flow reduced (approx. 30%)

4) Length of suction line: 1.5 m / length of discharge line: 10 m (at max. viscosity)

3.2 Dimensions

The indicated dimensions are the same for all control variants of the R031 range.
The following drawing shows the R031-P control variant.

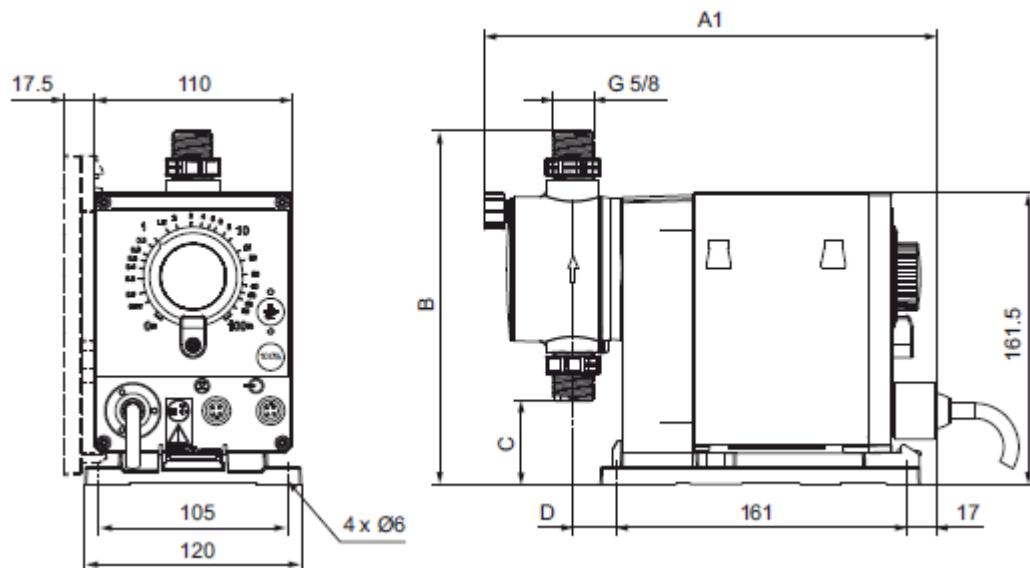


Fig.3 Dimensional drawing

Pump type	A1 (mm)	B (mm)	C (mm)	D (mm)
R031-6-10	251	196	46,5	24
R031-15-4	251	200,5	39,5	24

4. Assembly and installation

4.1 Pump assembly

The pump is delivered with a mounting plate. The mounting plate can be mounted vertically, e.g. on a wall, or horizontally, e.g. on a tank. It takes just a few quick steps to firmly secure the pump to the mounting plate by means of a slot mechanism.

The pump can easily be released from the mounting plate for maintenance.

4.1.1 Requirements

- The mounting surface must be stable and must not vibrate.
- Dosing must flow upwards vertically.

4.1.2 Align and install mounting plate

- **Vertical installation:** Mounting plate slot mechanism must be above.
- **Horizontal installation:** Mounting plate slot mechanism must be opposite the dosing head.
- The mounting plate can be used as a drill template, please see fig. 3 for drill hole distances.



Fig. 4 Locate mounting plate



Warning

Make sure that you do not damage any cables and lines during installation!

1. Indicate drill holes.
2. Drill holes.
3. Secure mounting plate using four screws, diameter 5 mm, to the wall, on the bracket or the tank.

4.1.3 Engage pump in mounting plate

1. Attach the pump to the mounting plate support clamps and slide under slight pressure until it engages.



Fig. 5 Engaging the pump

4.2 Hydraulic connection



Warning

Risk of chemical burns!

Wear protective clothing (gloves and goggles) when working on the dosing head, connections or lines!

Caution

The dosing head may contain water from the factory check!

When dosing media which should not come into contact with water, another medium must be dosed beforehand!

Caution

Faultless function can only be guaranteed in conjunction with lines supplied by Fink Chem + Tec OHG

Caution

The lines used must comply with the pressure limits as per section 3.1 Technical data!

Important information on installation

- Observe suction lift and hose diameter, see section 3.1 Technical data.
- Shorten hoses at right angles.
- Ensure that there are no loops or kinks in the hoses.
- Keep suction line as short as possible.
- Route suction line up towards the suction valve.
- Installing a filter in the suction line protects the entire installation against dirt and reduces the risk of leakage.

Hose connection procedure

1. Push union nut and tensioning ring across hose.
2. Push cone part fully into the hose, see fig. 6.
3. Attach cone part with hose to the corresponding pump valve.
4. Tighten union nuts manually
 - do not use tools!
5. Tighten up union nuts after 2-5 operating hours, if using PTFE gaskets!
6. Attach deaeration hose to the corresponding connection (see fig. 2) and run into a container or a collecting tray.

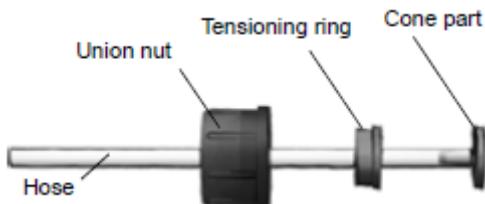


Fig. 6 Hydraulic connection

Note

Pressure differential between suction and discharge side must be at least 1 bar/14.5 psi!

Caution

Tighten up the dosing head screws once before commissioning and after 2-5 operating hours at 3 Nm.

Installation example

The pump offers various installation options. In the picture below, the pump is installed in conjunction with a suction line, level switch and multifunction valve on a Fink Chem + Tec OHG tank.

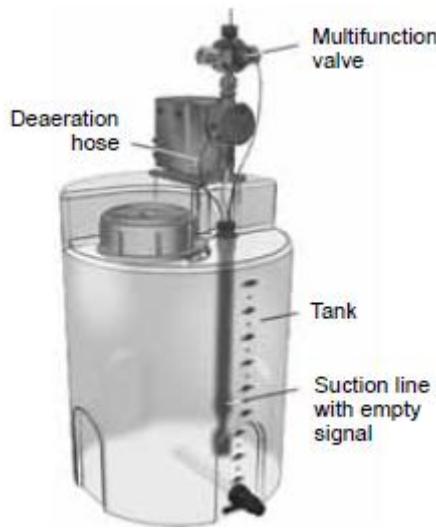


Fig. 7 Installation example

4.3 Electrical connection

Mains connection



Warning

The enclosure class (IP65/Nema 4X) is only guaranteed if lugs or protective caps or correctly installed!



Warning

**The pump can start automatically when the mains voltage is switched on!
Do not manipulate mains plug or cable!**

The pump is supplied with assembled mains cable and plug

1. Set capacity adjustment knob to 0% (see *6.1 Operating elements*).
2. Connect the mains plug with the mains socket.

Signal connections

Applies to R031-P control variant.

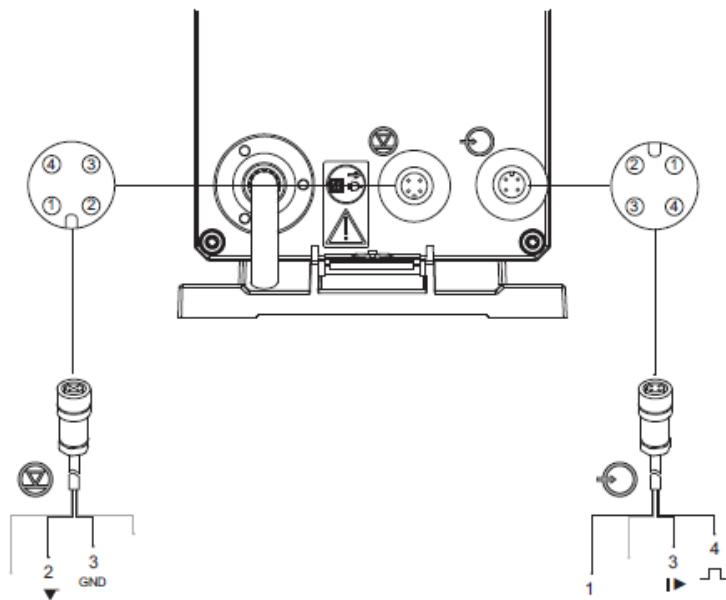


Fig. 8 Wiring diagram of the electrical connections (R031-P)

External stop and pulse input

Function	Pins				Plug type
	1/brown	2/white	3/blue	4/black	
External stop	GND		X		Pulse
Pulse	GND			X	Pulse

Level signals: empty signal

Function	Pins				Plug type
	1/brown	2/white	3/blue	4/black	
Empty signal		X	GND		Pulse

5. Commissioning

5.1 General notes



Warning

Suction and discharge hoses must be connected correctly!

The deaeration hose must be connected correctly and inserted into a suitable tank!

Caution

Tighten up the dosing head screws once before commissioning and after 2-5 operating hours at 3 Nm.

5.2 Check before commissioning

- Check that the rated voltage indicated on the nameplate complies with the local conditions.
- Check that all connections are assembled correctly. Tighten connections, if necessary.
- Check that the dosing head screws are tightened with the indicated torque (3 Nm).
Tighten dosing head screws, if necessary.
- Check that all electrical cables and plugs are connected correctly.

5.3 Start and deaerate the pump

- Connect mains supply (see *4.3 Electrical connection*).
- Open the deaeration screw by approximately half a turn.
- *R031-P Control variant:* Press the deaeration key (1200%) and hold it down, until liquid flows out of the deaeration hose continuously and without any bubbles
- *R031-B Control variant:* Turn the capacity adjustment knob to 100% and wait, until liquid flows out of the deaeration hose continuously and without any bubbles. Then set the capacity adjustment knob back to 0%
- Close the deaeration screw.

The pump is deaerated.

6. Operation

6.1 Operating elements

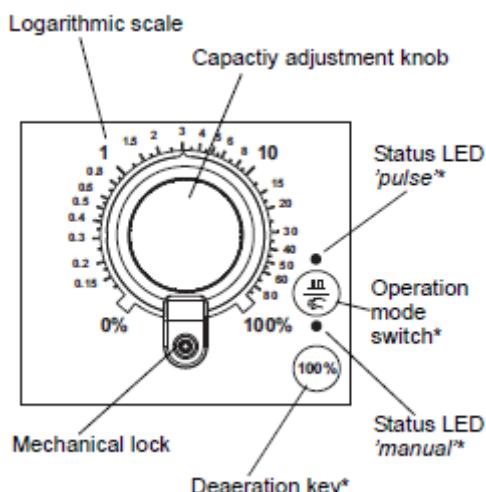


Fig. 9 Operating elements

Capacity adjustment knob

The capacity adjustment knob is used to set the capacity in percent of the maximum dosing flow of the pump. Due to the logarithmical increase of the percent values, even small dosing capacities can be set accurately.

Mechanical lock

The mechanical lock protects the set dosing capacity against unauthorised manipulation. For locking, tighten the screw until the adjustment knob cannot be turned anymore.

Keys and LEDs

* Applies to *R031-P control variant*.

When pressing and holding down the deaeration key, the pump doses at 100% for a certain time. The deaeration key can be used e.g. for deaeration.

The operation mode switch is used to change between the '*Manual*' and '*Pulse*' modes (see section *6.2.3*). According to the selected operation mode, the respective status LED is active ('pulse' = LED above switch; '*manual*'=LED below switch).

The status LEDs indicate the following operating statuses and faults:

LED colour	Pump status / fault
green (flashing)	stop
green	running
yellow	standby (external stop)
red	empty signal (alarm)
red (flashing)	motor blocked (alarm)

6.2 Operation modes

Following operation modes are available:

- **Manual**, see section 6.2.1
- **Pulse***, see section 6.2.2

*Applies to R031-P control variant.

6.2.1 Manual

In this operation mode, the pump doses constantly the dosing quantity set by adjustment knob.

The setting range depends on the pump type:

Type	Setting range (l/h)
R031-6-10	6 ml/h – 6 l/h
R031-15-4	15 ml/h – 15 l/h

6.2.2 Pulse

Applies to R031-P control variant.

In this operation mode, the pump doses the set dosing volume for each incoming (potential-free) pulse, e.g. from a water meter. There is no direct connection between incoming pulses and dosing strokes. The pump automatically calculates the optimum stroke frequency for dosing the set volume per pulse.

The calculation is based on:

- the frequency of external pulses
- the set stroke volume in percent.

The dosing quantity per pulse is set to a value between 0.1% and 100% of the stroke volume using the adjustment knob.

The setting range depends on the pump type:

Type	Setting range
R031-6-10	0,8 µl – 0,81 ml
R031-15-4	1,6 µl – 1,58 ml

The frequency of incoming pulses is multiplied by the set dosing volume. If the pump receives more pulses than it can process at the maximum dosing flow, it runs at the maximum stroke frequency in continuous operation. Excess pulses will be ignored if the memory function is not enabled.

6.2.3 Change operation modes

Applies to R031-P control variant.

1. Set adjustment knob to 0%
2. Connect mains supply (see section 4.3 *Electrical connection*).
3. Hold down the operation mode switch for at least 5 seconds.

The new operation mode is saved.

6.3 Inputs

Applies to R031-P control variant.

6.3.1 External stop

The pump can be stopped via an external pulse, e.g. from a control room. When activating the external stop pulse, the pump switches from the operational state '*Running*' into the operational state '*Standby*'. According to the selected operation mode, the respective LED flashes yellow.

Caution

Frequent disengagement from the mains voltage, e.g. via a relay, can result in damage to the pump electronics and to the breakdown of the pump. The dosing accuracy is also reduced as a result of internal start procedures.

Do not control the pump via the mains voltage for dosing purposes!

Only use the '*External stop*' function to start and stop the pump!

6.3.2 Empty signal

In order to monitor the filling level in the tank, a one-level sensor (empty signal) can be connected to the pump.

The pump reacts to the signal as follows:

- the active status LED flashes red
- the pump stops.

Caution

When the tank is filled up again, the pump restarts automatically!

6.3.3 Change contact type

The signal inputs (empty signal and external stop) are configured at the factory as normally open (NO) contacts. They can be re-configured as normally closed (NC) contacts. The re-configuration is always made for both inputs.

1. Set adjustment knob to 0%.
2. Connect mains supply (see section 4.3 *Electrical connection*).
3. Press deaeration key and operation mode key simultaneously and hold them down for at least 2 seconds.

The new contact type is saved.

7. Service

In order to ensure a long service life and dosing accuracy, wearing parts such as diaphragms and valves must be regularly checked for signs of wear. Where necessary, replace worn parts with original spare parts made from suitable materials.

Should you have any questions, please contact with us.



Warning

If the diaphragm leaks or is broken, dosing liquid will escape from the discharge opening on the dosing head (see fig. 2).

Take suitable precautions to prevent harm to health and damage to property caused by escaping dosing liquid!

Check daily whether liquid is escaping from the discharge opening!

7.1 Service intervals

Interval	Task
Every day	Check, if liquid leaks from dosing head, drain opening or valves (see fig. 2). If necessary, tighten dosing head screws (3Nm), valves and cap nuts, or perform service (see 7.2 Perform service).
Every 2 years or 8000 operating hours	Replace diaphragm and valves (see 7.2 Perform service)

7.2 Perform service

Only spare parts and accessories from Fink Chem + Tec OHG should be used for maintenance. The usage of non-original spare parts and accessories renders any liability for resulting damages null and void.

!



Warning

When dosing dangerous media, observe corresponding precautions in the safety data sheets!

Risk of chemical burns!

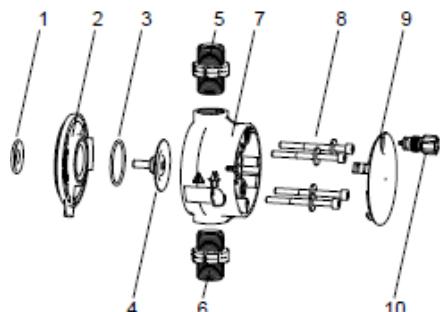
Wear protective clothing (gloves and goggles) when working on the dosing head, connections or lines!

Do not allow any chemicals to leak from the pump. Collect and dispose of all chemicals correctly!

Caution

Before any work to the pump, the pump must be disconnected from the mains. The system must be pressureless!

7.2.1 Dosing head overview



1	Safety diaphragm
2	Flange
3	O-ring
4	Diaphragm
5	Valve on discharge side
6	Valve on suction side
7	Dosing head
8	Screws with discs
9	Cover
10	Deaeration valve

Fig. 10 Dosing head, exploded view

7.2.2 Dismantling the diaphragm and valves

1. Make system pressureless.
2. Empty the dosing head before maintenance and flush it if necessary.
3. Set adjustment knob to 0%.
4. Switch off mains supply.
5. Take suitable steps to ensure that the returning liquid is safely collected.
6. Dismantle suction, pressure and deaeration hoses.
7. Dismantle valves on suction and discharge side (5, 6).
8. Remove the cover (9).
9. Loosen screws (8) on the dosing head (7) and remove the screws and discs.
10. Remove the dosing head (7).
11. Unscrew diaphragm (4) counter-clockwise and remove with flange (2)

7.2.3 Reassembling the diaphragm and valves

1. Attach flange (2) correctly and screw on new diaphragm (4) clockwise.
- Make sure that the O-ring (3) is seated correctly!
2. Connect / switch on mains supply.
3. Turn the adjustment knob slowly to bring the diaphragm into its serviced position '*inside*' (end of suction phase, diaphragm retracted). Set adjustment knob back to 0%
4. Switch off mains supply again.
5. Attach the dosing head (7).
6. Install screws with discs (8) and cross-tighten.
- Torque: 3 Nm.
7. Attach the cover (9)
8. Install new valves (5, 6).
- Do not interchange valves and pay attention to direction of arrow.
9. Connect suction, pressure and deaeration hoses (see section 4.2 *Hydraulic connection*).
10. Degaerate dosing pump (see section 5.3 Start and degenerate the pump).
11. Please observe the notes on commissioning in section 5. *Commissioning*!

7.3 Repairs



Warning

The pump housing must only be opened by personnel authorised by Fink Chem + Tec OHG!

Repairs must only be carried out by authorised and qualified personnel!

Switch off the pump and disconnect it from the voltage supply before carrying out maintenance work and repairs!

After consulting Fink Chem + Tec OHG, please send the pump, together with the safety declaration completed by a specialist, to Fink Chem + Tec OHG. The safety declaration can be found at the end of these instructions. It must be copied, completed and attached to the pump.

Caution

If the pump has been used to dose toxic liquids or liquids hazardous to health, the pump must be cleaned prior to dispatch!

If the above requirements are not met, the Fink Chem + Tec OHG may refuse to accept delivery of the pump. The shipping costs will be charged to the sender.

8. Faults

8.1 Indication of faults

Depending on the selected operation mode, the pump indicates the following faults with its LEDs:

LED colour	Fault	Remedy
red	empty signal	<ul style="list-style-type: none">• fill tank• check contact type• (see section 6.3.3).
red (flashing)	motor blocked	<ul style="list-style-type: none">• reduce backpressure.• have gear repaired, if necessary.

For further faults, please see 8.2 *List of faults*.

8.2 List of faults

Fault	Possible cause	Possible remedy
1. Dosing flow too high	a) Inlet pressure greater than backpressure	<ul style="list-style-type: none"> • Install additional spring loaded valve (approx. 3 bar) on the discharge side. • Increase pressure differential
2. No dosing flow or dosing flow too low	a) Air in dosing head	Deaerate the pump.
	b) Faulty diaphragm	Change the diaphragm (see section 7.2 Perform service).
	c) Leakage/fracture in lines	Check and repair lines.
	d) Valves leaking or blocked	Check and clean valves.
	e) Valves installed incorrectly	<ul style="list-style-type: none"> • Check that the arrow on the valve housing is pointing in the direction of flow. • Check whether all O-rings are installed correctly.
	f) Blocked suction line	• Clean suction line/install filter.
	g) Suction lift too high	<ul style="list-style-type: none"> • Reduce suction lift. • Install priming aid.
	h) Viscosity too high	<ul style="list-style-type: none"> • Use hose with larger diameter. • Install spring-loaded valve on the discharge side.
	i) Degaeration valve open	• Close the degaeration valve.
3. Irregular dosing	a) Valves leaking or blocked	Tighten up valves, replace valves if necessary (see section 7.2 Perform service)
	b) Backpressure fluctuations	Keep backpressure constant.
4. Liquid escaping from the discharge opening on the flange	a) Faulty diaphragm	Change the diaphragm (see 7.2 Perform service).)
5. Liquid escaping	a) Dosing head screws not screwed in as far as they will go	Tighten up screws (see section 4.2 Hydraulic connection).
	b) Valves not screwed in as far as they will go	Tighten up valves/union nuts (see section 4.2 Hydraulic connection).
6. Pump not sucking in	a) Suction lift too high	Reduce suction lift; if necessary, provide positive inlet pressure.
	b) Backpressure too high	Open the degaeration valve.
	c) Soiled valves	Flush system, replace valves if necessary (see section 7.2 Perform service).

9. Disposal

This product and all its associated parts must be disposed of in an environmentally friendly manner. Use appropriate waste collection services. If there is no such facility or the facility refuses to accept these materials used in the product, the product can be sent to the Fink Chem + Tec OHG.

Appendix

Safety declaration

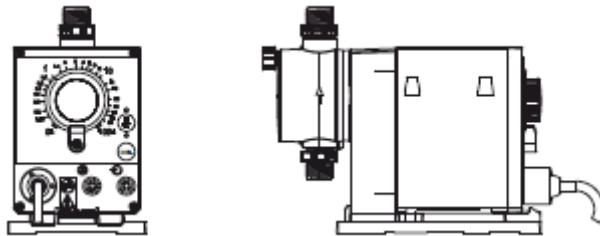
Please copy, fill in and sign this sheet and attach it to the pump returned for service.

Product type (nameplate) _____
Model- number (nameplate) _____
Dosing medium _____

Fault description

Please make a circle around the damaged parts.

In the case of an electrical or functional fault, please mark the cabinet.



Please describe the error / cause of the error in brief.

We hereby declare that the pump has been cleaned and is completely free from chemical, biological and radioactive substances.

Date, signature and Company stamp

© 2011 Fink Chem + Tec OHG

The texts, images and examples in this manual are carefully compiled. Fink Chem + Tec OHG is not liable for possible remaining incorrect details and following consequences or breach of other third party rights neither legal responsibility nor other liability. We are thankful for any notifications or improvement suggestions.

The material, Soft and Hardware terms and names mentioned in this manual are usually registered trademarks and underlie the legal regulations.

The manual protected by copyright. All rights reserved. No part of this manual may be reproduced by photo copy, microfilm or other means or transferred to machines, especially data processing equipment, in the appropriate language. Presentation by submission in lectures, radio and television is allowed only with our written consent.

EG - Declaration of Conformity

Machinery Directive 2006/42/EG, II 1, A

Membrane Metering Pumps

R 031-xxx

Manufacturer Fink Chem+Tec OHG
Hofstraße 9
D-78073 Bad Dürrheim

We declare that this delivered R 031/DDE Metering Pump and in all versions are in conformity with the following standards or standardized documents according to the provisions of the directives of the EC state members.

- Machinery Directive (2006/42/EG).
Standards used:
EN 809: 1998
EN ISO 12100-1+A1: 2009
EN ISO 12100-2+A1: 2009
- EMC Directive (2004/108/EG).
Standards used:
EN 61000-6-2: 2005,
EN 61000-6-4: 2007
- Low Voltage Directive (2006/95/EG).
Standard used: EN 60204-1+A1: 2009
- Electrical equipment applied within specified voltage ranges
Norm EN 61 010 -1 und EN 61 010-2-010/A1

Person authorised to compile technical file and empowered to sign the EC declaration of conformity.

Manufacturer/Supplier
Grundfos/Fink Chem+Tec OHG

D. Fink

Date
06.09.2011